



GREEN LINE EXTENSION PROJECT



massDOT
Massachusetts Department of Transportation

1



GLX Community Working Group
Monthly Meeting
August 6, 2019

Agenda

Welcome & Introduction

- John Dalton - MBTA
- Terry McCarthy - MBTA

Safety

- Dianna Souza - MBTA
- Michael Weatherred, GLXC

Construction Update

- John West, GLXC

Schedule Management

- William Scully, GLX – MBTA



Outreach

- Art Beat at Davis Square (July 13)



Outreach

Weekend Demo at Broadway Bridge (Aug. 2 - 4)

- *Sent out email blast to 7,100 plus stakeholders in database*
- *Targeted email to HOAs and property managers*
- *Went door to door to 100 homes and businesses*



Outreach

Tour of Magoun Station (Sat. Aug. 3)

- *Meeting to discuss upcoming construction, answer station and Community Path questions hosted by Ryan Dunn.*





GLX-C Safety

Michael Weatherred



Heat stress awareness and staying well hydrated continues to be a priority as we experienced the hottest July on record.



WATER. REST. SHADE.

The work can't get done without them.

Drink water often

Rest in the shade

Report heat symptoms early

Know what to do in an emergency

Safety

GLX-C safety lagging indicator performance bests the national performance by almost 400%

| | JULY 2019 | | | 2019 YEAR TO DATE | | | PROJECT TO DATE | | |
|---|-----------|---------------------------------------|--|-------------------|---------------------------------------|--|-----------------|---------------------------------------|--|
| Entity | Hours* | Total Recordable Incident Rate (TCIR) | Days Away Restricted or Transferred Cases (DART) | Hours* | Total Recordable Incident Rate (TCIR) | Days Away Restricted or Transferred Cases (DART) | Hours* | Total Recordable Incident Rate (TCIR) | Days Away Restricted or Transferred Cases (DART) |
| Goals | -- | -- | -- | -- | 0.40 | 0.15 | -- | 0.40 | 0.15 |
| GLXC Craft | 21,343 | 0.00 | 0.00 | 126,088 | 3.17 | 3.17 | 199,392 | 3.01 | 2.01 |
| GLXC Staff | 25,981 | 0.00 | 0.00 | 119,596 | 0.00 | 0.00 | 243,078 | 0.00 | 0.00 |
| Subs | 21,341 | 9.37 | 9.37 | 94,176 | 4.25 | 4.25 | 140,967 | 2.84 | 2.84 |
| STV | 30,136 | 0.00 | 0.00 | 236,132 | 0.00 | 0.00 | 594,803 | 0.00 | 0.00 |
| Total | 98,801 | 2.02 | 2.02 | 575,992 | 1.39 | 1.39 | 1,178,240 | 0.85 | 0.68 |
| <i>*Hours are preliminary numbers and are subject to revision monthly</i> | | | | | | | | | |



GLX-C Construction Update

John West



Construction Update

Broadway Bridge

- *Support of Excavation (SOE) is complete. Wood lagging in place.*
- *Excavation for new abutments nearly complete.*
- *Old east abutment demolished Aug. 2 – 4 weekend.*



Construction Update

Broadway Bridge

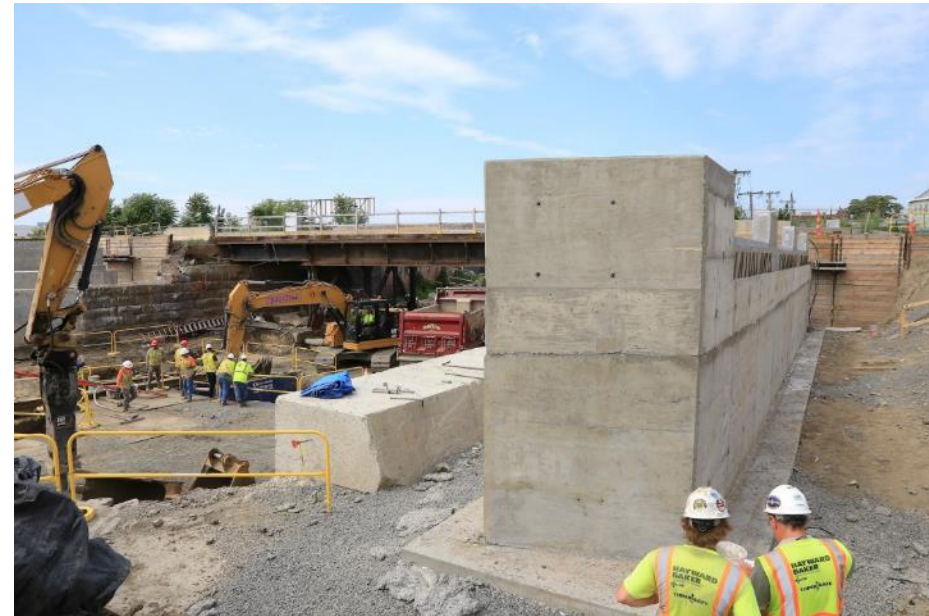
- *East abutment demo Aug. 2 – 4 weekend.*



Construction Update

Washington St. Bridge

- *Steel placement planned for Aug. 24*
- *Drainage work is complete*



Construction Update

Medford St. Bridge

- *GLX work on west abutment to start Aug. 7. Construction will include adding an additional abutment behind the existing west abutment to accommodate one set of Green Line tracks*
- *Bridge to reopen in Spring 2020*



Construction Update

School St. Bridge Closure

- *School St. Bridge to close early 2020*
- *Construction will include adding an additional abutment behind the existing west abutment to accommodate one set of Green Line tracks*



Construction Update

Preparing for Track Shift

- Completed thermo-welding 80' long sections of light rail (1,700 tons that will be placed on alignment next spring.
- Will be placing additional 175 tons of commuter grade rail line this fall along the east side of the corridor.



Construction Update

Vehicle Maintenance Facility

- *Pile driving is underway*
- *270 piles will be driven this month*



Construction Update

Work near Union Square Station

- Wall behind Target removed
- MSE wall (UN-2) construction to begin



Construction Update

Lechmere Area

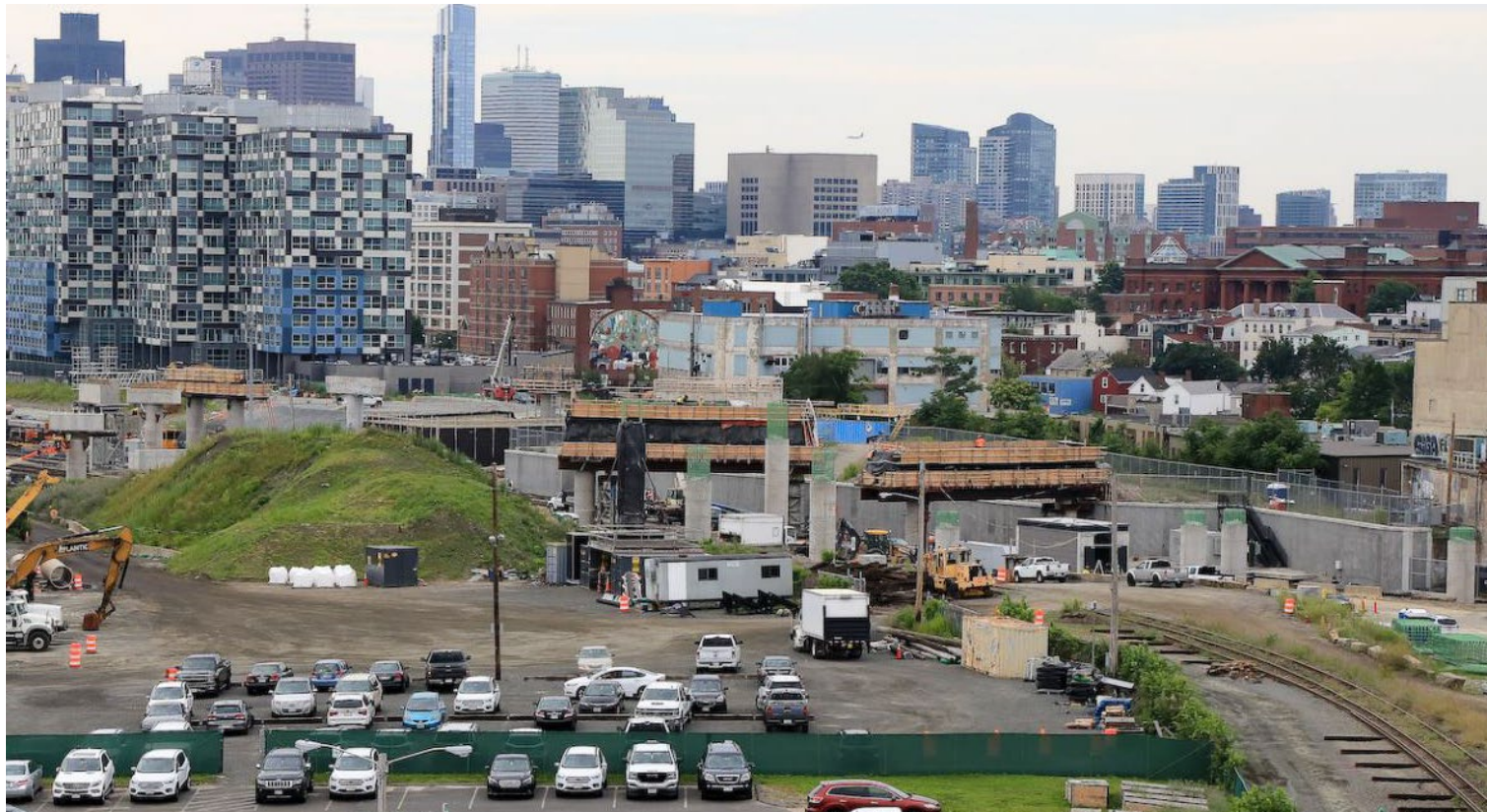
- Both drilling crews now working between BET area and Water St.
- Brisk activity including pouring concrete columns and pier caps for viaduct



Construction Update

Boston Engine Terminal (BET) Area

- *Viaduct work continues with frequent night and weekend work*



Construction Update

Brickbottom Area

- Work along this part of the Fitchburg line includes viaduct construction, utility relocations and wall construction (N-3A/N-3B)



Construction Update

Noise & Retaining Walls

Between McGrath Hwy – Walnut St.

- Noise Wall (N-6) ready for panel installation



Construction Update

Noise & Retaining Walls

Between Schools St. – Sycamore

- Noise Wall (N-7A & B) work starting
- Built up embankment to support drill rig for wall foundations



Project Status

Noise & Retaining Walls Between Lowell – Cedar St.

- Drainage installation and post installation for Noise Wall (N-10, ME-2, ME-2A & N-11) continues



Construction Update

Noise & Retaining Walls

Between Cedar St. - Broadway

- ME-2.1/ Noise Wall N-12 – ready for panel placement



Construction Update

Noise & Retaining Walls Between Broadway – Harvard St.

- ME-2.4/Noise Wall N-14A & N-14B



Construction Update

Noise & Retaining Walls

Between College Ave. – Winthrop St.

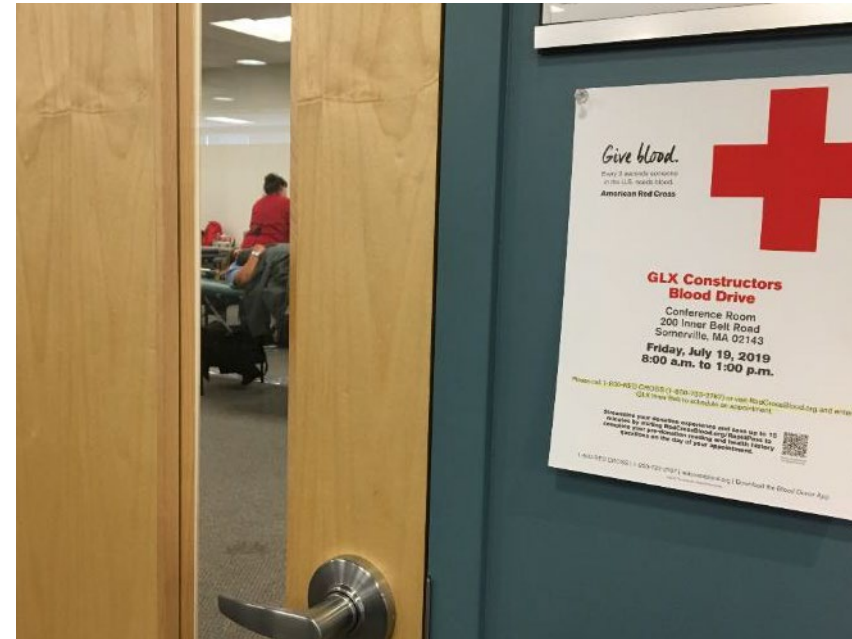
- Posts placement complete for Noise Wall N-15 (along Burget & Charnwood)
- Post placement continues for ME-3A & ME-3B



Outreach

Community Connection Team – Red Cross Blood Drive

- Friday, July 12 & 19 at 35 Charlestown & Inner Belt Office
- 30 employees donated



Team Building

Soccer (July 25) at Gold Star Mothers Park



GLX-C: 6

GLX: 4 (OT)



Schedule Management

William Scully



Training Goals

- **Schedule Basic**
- **Understanding of how to read a schedule**
- **Difference between Early Dates and Late Dates**
- **What is Float**
- **How is Free Float different from Total Float**
- **Milestones and how they affect Critical Paths**
- **Our project milestones and the Critical Path**

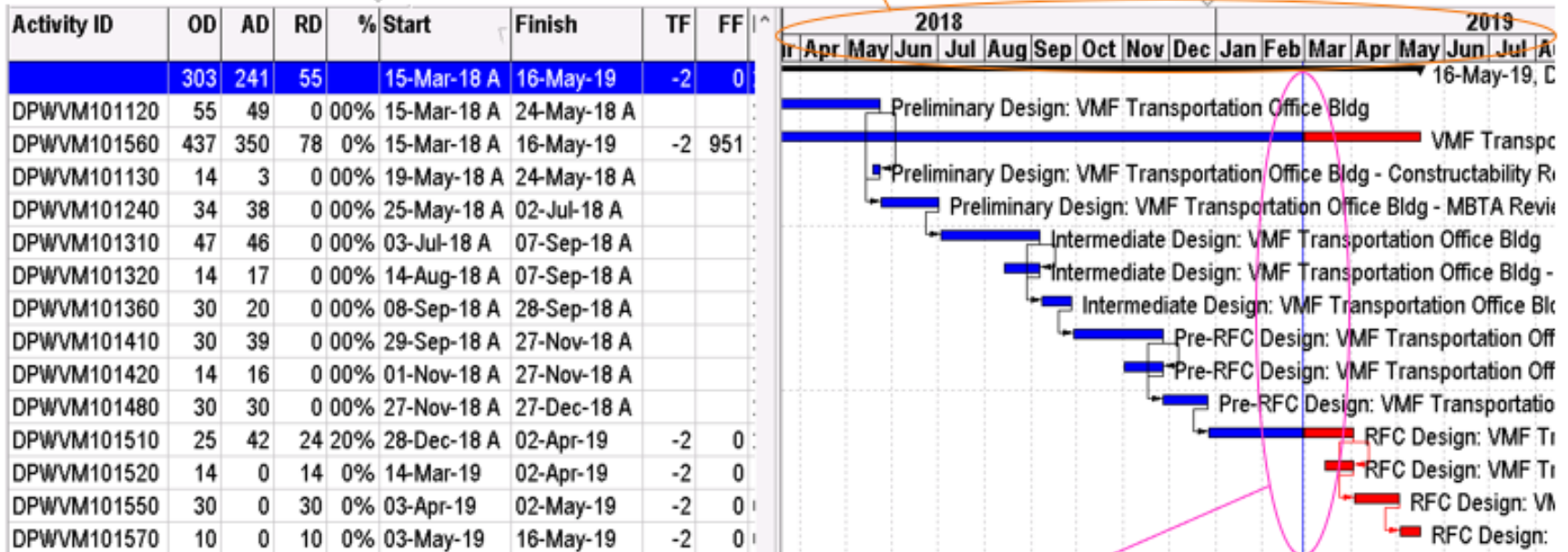


Schedule Basics

Activity Table

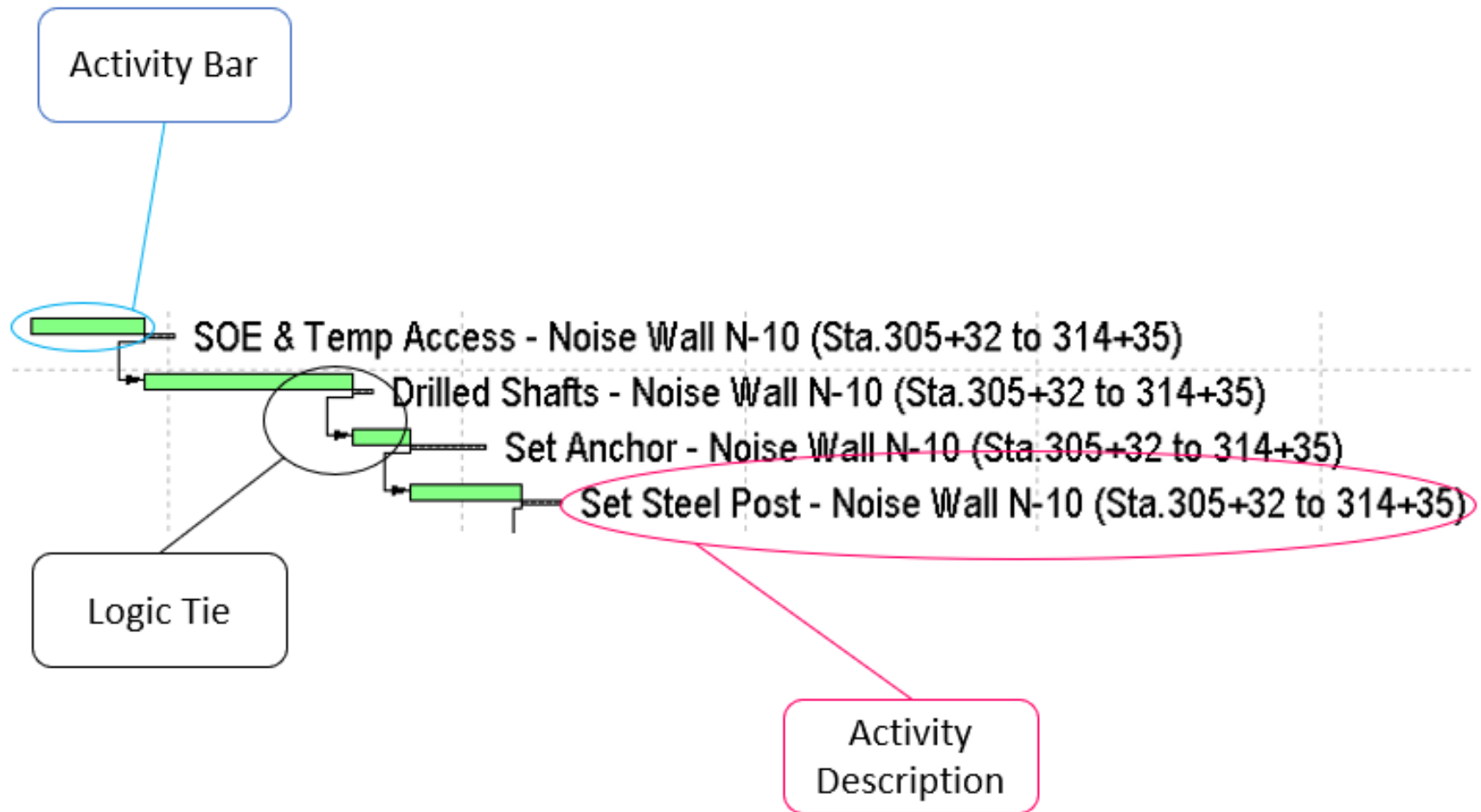
Timeline

Bar Chart



Data Date

Schedule Basics



Schedule Basics

- **Activity Constraints (apply for float determination)**
 - As Late As Possible
 - Finish On
 - Finish On or After
 - Finish On or Before (commonly used)
 - Mandatory Finish



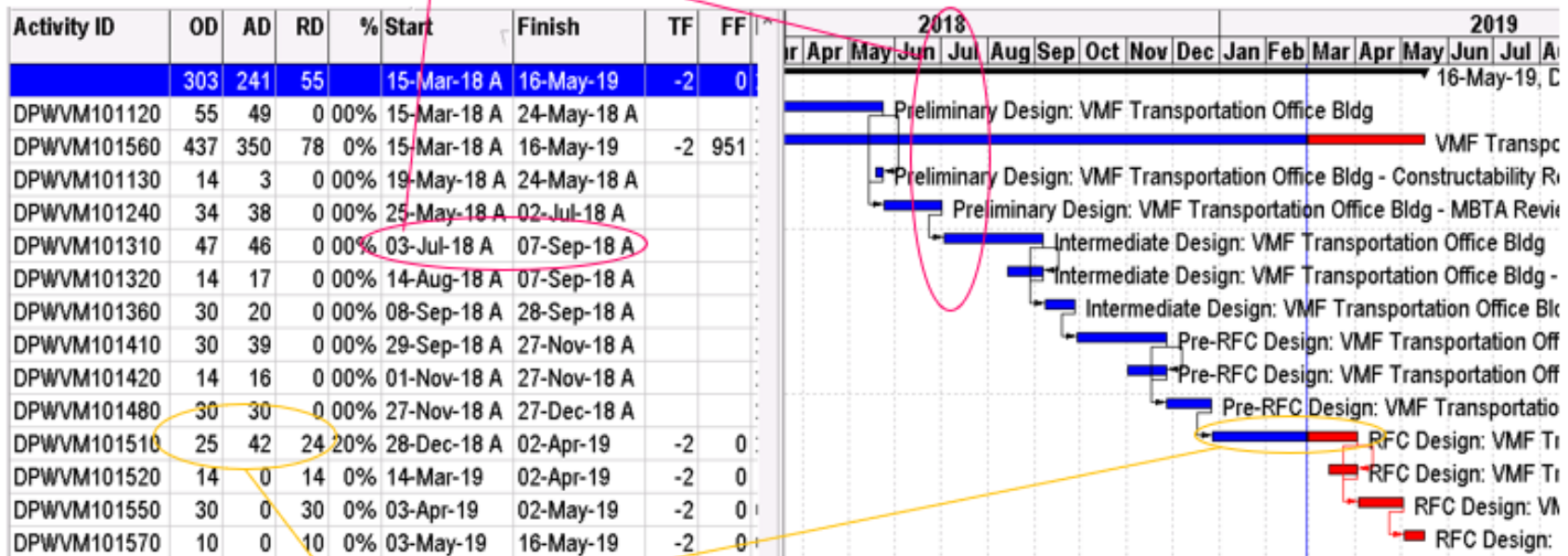
Schedule Basics

- **Activity Constraints (apply for float determination)**
- **As Late As Possible**
- **Finish On**
- **Finish On or After**
- **Finish On or Before (commonly used)**
- **Mandatory Finish**



Understanding How to Read a Schedule

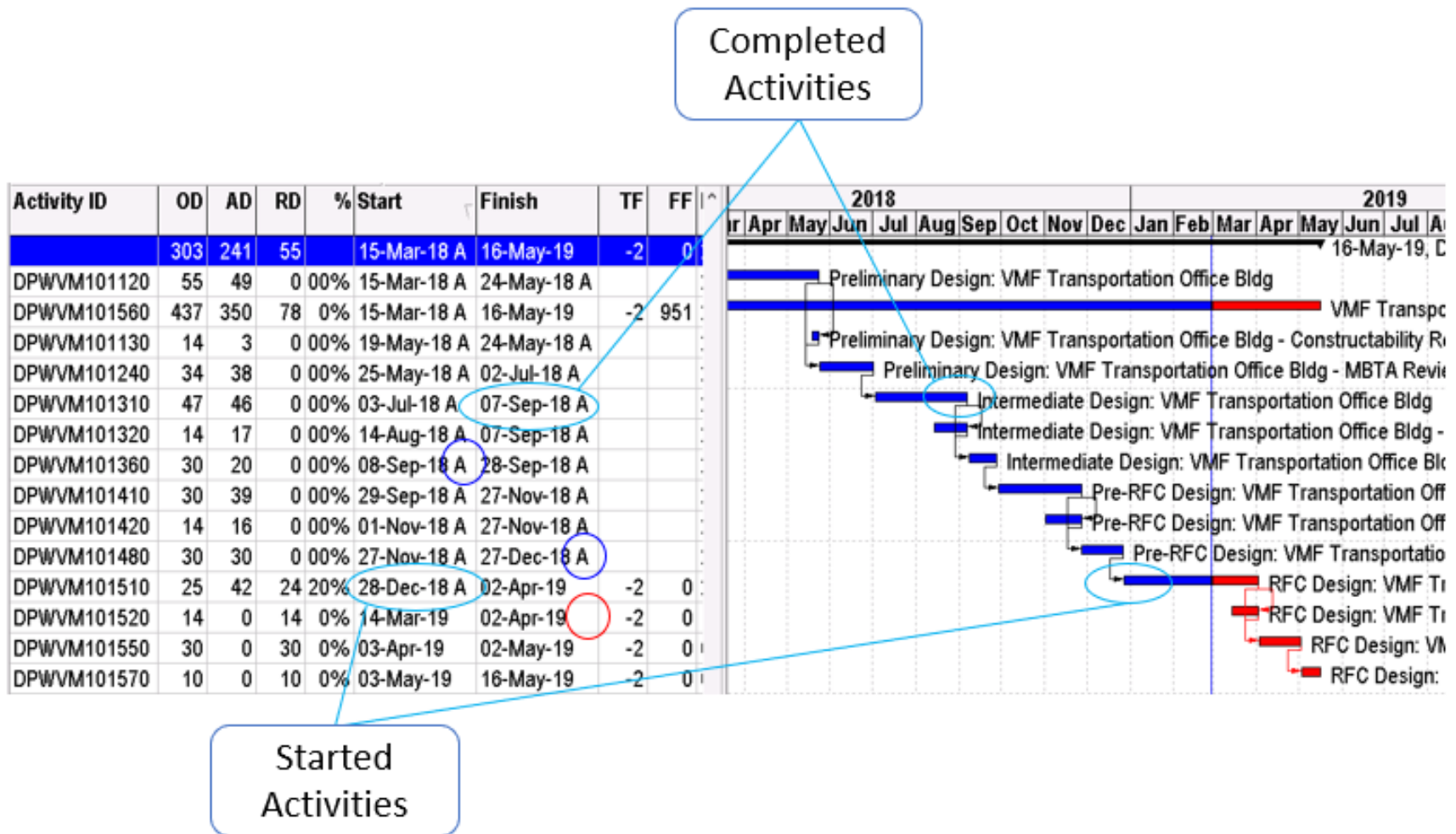
Date Info



Duration
Info



Understanding How to Read a Schedule



Understanding How to Read a Schedule

TF is Total
Float

| Activity ID | OD | RD | % | Start | Finish | TF | FF | F | March 2019 | | | | April 2019 | | | | May 2019 | | | | June 2019 | | | | | | |
|-------------|----|----|-----|-------------|-----------|-----|----|---|------------|----|----|----|------------|----|----|----|----------|----|----|----|-----------|----|----|----|----|----|----|
| | | | | | | | | | 3 | 10 | 17 | 24 | 03 | 10 | 17 | 24 | 31 | 07 | 14 | 21 | 28 | 05 | 12 | 19 | 26 | 02 | 09 |
| CS6VD100080 | 3 | 1 | 50% | 11-Feb-19 A | 02-Mar-19 | 5 | 1 | | | | | | | | | | | | | | | | | | | | |
| CS6VD100100 | 3 | 3 | 0% | 04-Mar-19 | 07-Mar-19 | 7 | 24 | | | | | | | | | | | | | | | | | | | | |
| CS6VD100160 | 4 | 4 | 0% | 12-Apr-19 | 22-Apr-19 | -17 | 0 | | | | | | | | | | | | | | | | | | | | |
| CS6VD100220 | 3 | 3 | 0% | 22-Apr-19 | 26-Apr-19 | -17 | 0 | | | | | | | | | | | | | | | | | | | | |
| CS6VD100230 | 1 | 1 | 0% | 26-Apr-19 | 29-Apr-19 | -17 | 0 | | | | | | | | | | | | | | | | | | | | |
| CS6VD100250 | 2 | 2 | 0% | 29-Apr-19 | 01-May-19 | -28 | 1 | | | | | | | | | | | | | | | | | | | | |
| CS6VD100430 | 4 | 4 | 0% | 22-May-19 | 29-May-19 | -3 | 0 | | | | | | | | | | | | | | | | | | | | |
| CS6VD100490 | 5 | 5 | 0% | 29-May-19 | 06-Jun-19 | -3 | 0 | | | | | | | | | | | | | | | | | | | | |
| CS6VD100530 | 1 | 1 | 0% | 06-Jun-19 | 07-Jun-19 | -3 | 0 | | | | | | | | | | | | | | | | | | | | |
| CS6VD100730 | 14 | 14 | 0% | 07-Jun-19 | 20-Jun-19 | -3 | 1 | | | | | | | | | | | | | | | | | | | | |

Drilled Shafts - Pier 04 - Union Sq. Viaduct (UEV), S4

Prep-drilled shafts for column work - Pier 04 - Ur

Columns Formwork - Pier 04 - I

Columns Rebar - Pier 04 - Ur

Columns Pour - Pier 04 - Ur

Columns Cure and Strip - I

Cap Formw

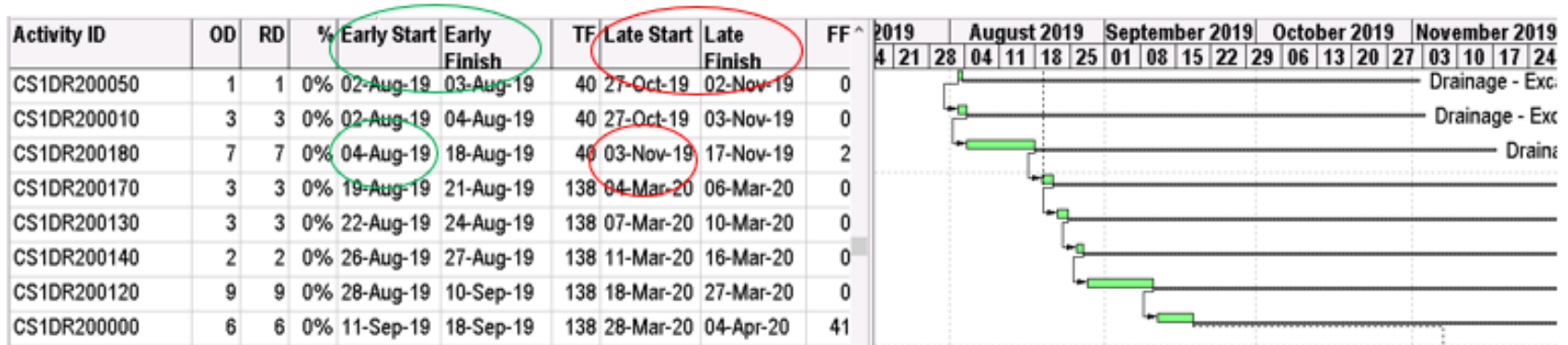
Pier Ca

Cap Po

FF is Free
Float

Difference between Early Dates and Late Dates

- Early Dates = WHEN YOU **CAN** START or FINISH



- Late Dates = WHEN YOU **MUST** START or FINISH



What is Float?

- Is the number of days (Business or Calendar) between when you **CAN** START or FINISH and When You **MUST** START or FINISH
- When Float is **Positive** = Ahead of Schedule

| Activity ID | OD | RD | % | Early Start | Early Finish | TF | Late Start | Late Finish | FF ^ |
|-------------|----|----|----|-------------|--------------|----|------------|-------------|------|
| CS1DR200050 | 1 | 1 | 0% | 02-Aug-19 | 03-Aug-19 | 40 | 27-Oct-19 | 02-Nov-19 | 0 |
| CS1DR200010 | 3 | 3 | 0% | 02-Aug-19 | 04-Aug-19 | 40 | 27-Oct-19 | 03-Nov-19 | 0 |

Early Start is before Late Start

AHEAD OF SCHEDULE

What is Float?

- Is the number of days (Business or Calendar) between when you **CAN** START or FINISH and When You **MUST** START or FINISH
- When Float is **Negative** = Behind Schedule

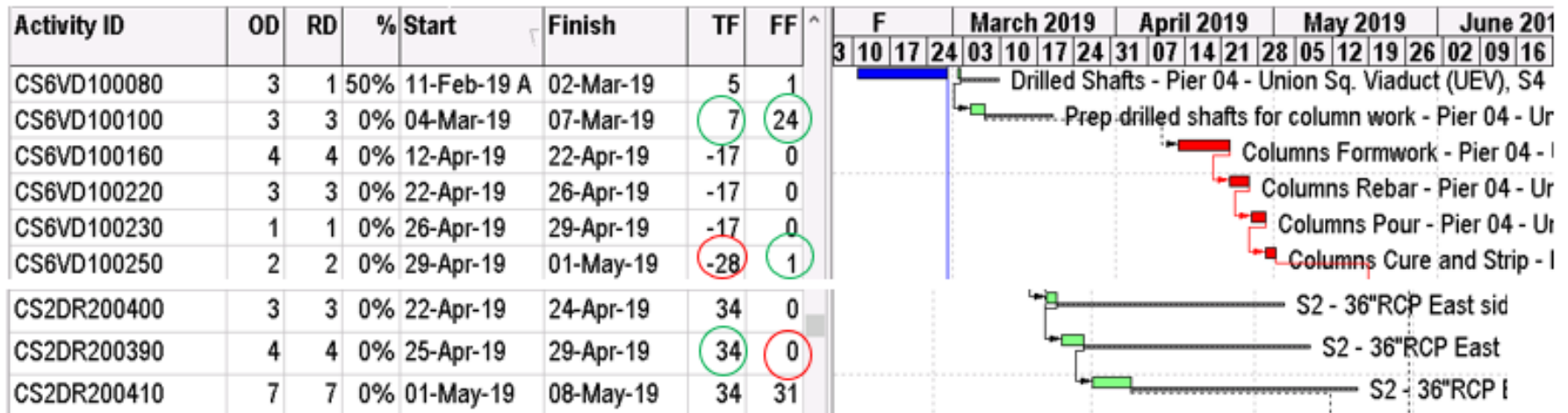
| Activity ID | OD | RD | % | Early Start | Early Finish | TF | Late Start | Late Finish | FF | ^ |
|-------------|----|----|----|-------------|--------------|-----|------------|-------------|----|---|
| CS4VD100890 | 8 | 8 | 0% | 06-Apr-19 | 17-Apr-19 | -5 | 01-Apr-19 | 09-Apr-19 | 0 | |
| CS4VD101000 | 5 | 5 | 0% | 17-Apr-19 | 25-Apr-19 | -4 | 09-Apr-19 | 18-Apr-19 | 14 | |
| CS4VD101090 | 4 | 4 | 0% | 15-May-19 | 21-May-19 | -18 | 18-Apr-19 | 25-Apr-19 | 0 | |

Early Start is after Late Start

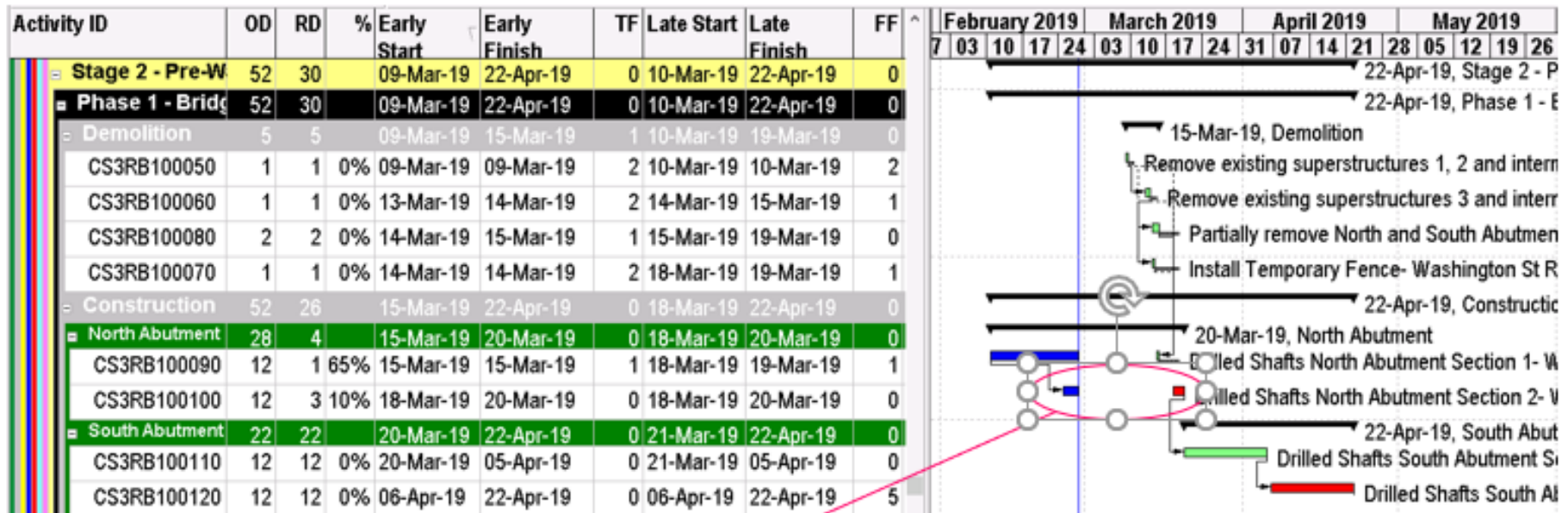
BEHIND SCHEDULE

How is Free Float different from Total Float

- Free Float (FF) is the amount that particular activity can slide without delaying the successor activity
- Total Float (TF) is the amount that sequence of Activities can slide without delaying the critical path



Exercise – What do you see?



Gap between Activity in Progress
and completion of activity

Milestones and How they Affect the Critical Path

| Milestone | Current Contractual Date |
|--|--------------------------|
| Notice to Proceed | 20-Dec-17 |
| Milestone 5 – VMF Functionally Complete & Ready for MBTA Operational Testing | 09-Oct-20 |
| Milestone 4C – Revenue Service for the Union Branch (One) | 28-Apr-21 |
| Milestone 3C – Revenue Service for Medford Branch (Two) | 10-Jul-21 |
| Milestone 2 – Contract Substantial Completion | 21-Aug-21 |
| Milestone 1 – Final Acceptance | 20-Oct-21 |

- Milestones are waypoints
 - Contractual
 - Physical
 - Technical
 - Commercial
 - Stakeholder
- Provide a fixed point for assess the health of the Schedule

Milestones and How they Affect the Critical Path

| Milestone | Current Contractual Date | Forecast |
|--|--------------------------|---------------|
| Notice to Proceed | 20-Dec-17 | 20-Dec-17 (A) |
| Milestone 5 – VMF Functionally Complete & Ready for MBTA Operational Testing | 09-Oct-20 | 28-Oct-20 |
| Milestone 4C – Revenue Service for the Union Branch (One) | 28-Apr-21 | 28-Apr-21 |
| Milestone 3C – Revenue Service for Medford Branch (Two) | 10-Jul-21 | 18-Jul-21 |
| Milestone 2 – Contract Substantial Completion | 21-Aug-21 | 29-Aug-21 |
| Milestone 1 – Final Acceptance | 20-Oct-21 | 28-Oct-21 |

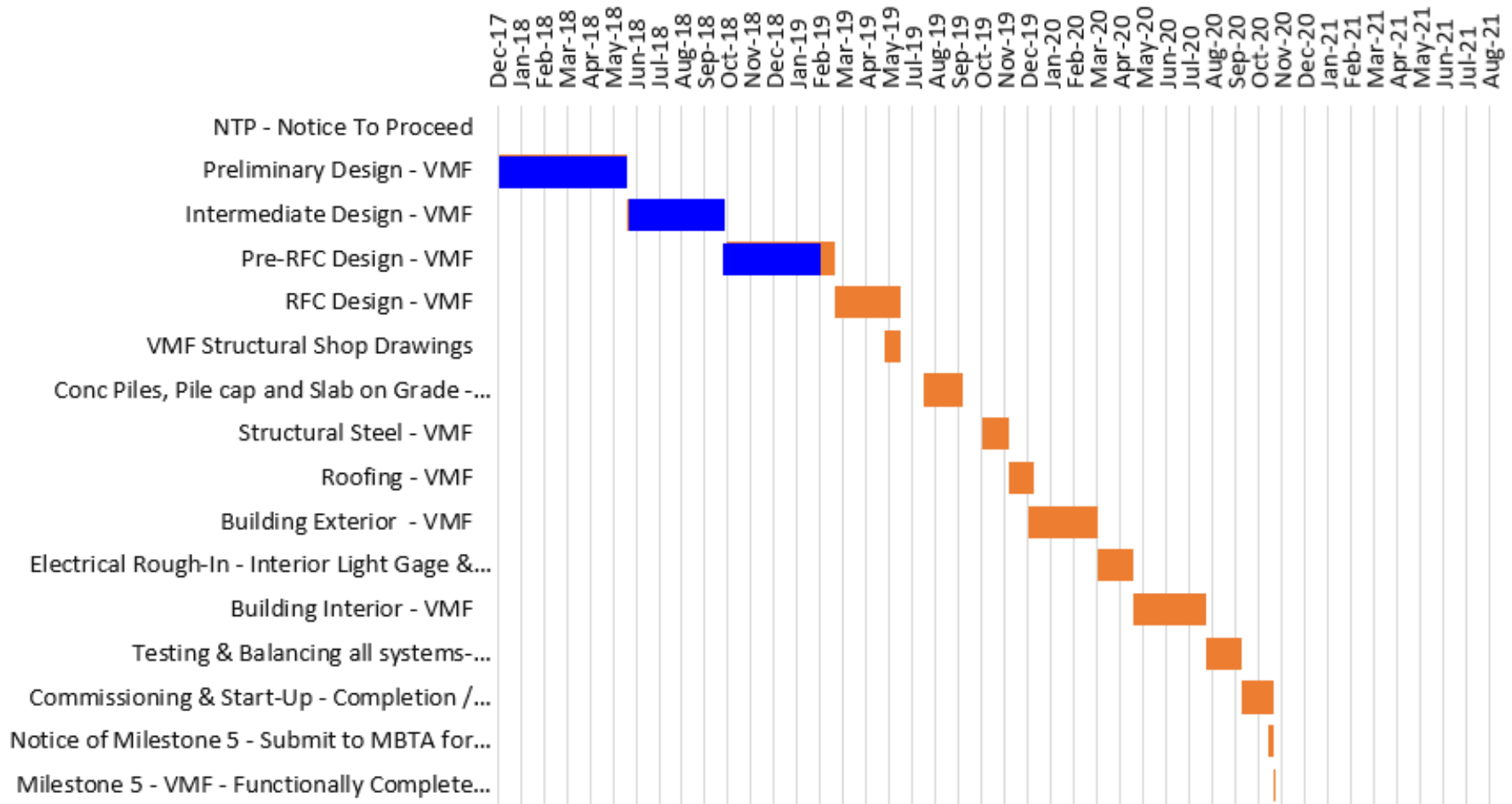


Milestones and How they Affect the Critical Path

| Milestone | Current Contractual | | |
|--|---------------------|------------------|-----|
| | Date | Forecast | TF |
| Notice to Proceed | 20-Dec-17 | 20-Dec-17 (A) | 0 |
| Milestone 5 – VMF Functionally Complete & Ready for MBTA Operational Testing | 09-Oct-20 | 28-Oct-20 | -18 |
| Milestone 4C – Revenue Service for the Union Branch (One) | 28-Apr-21 | 28-Apr-21 | 0 |
| Milestone 3C – Revenue Service for Medford Branch (Two) | 10-Jul-21 | 18-Jul-21 | -8 |
| Milestone 2 – Contract Substantial Completion | 21-Aug-21 | 29-Aug-21 | -8 |
| Milestone 1 – Final Acceptance | 20-Oct-21 | 28-Oct-21 | -8 |

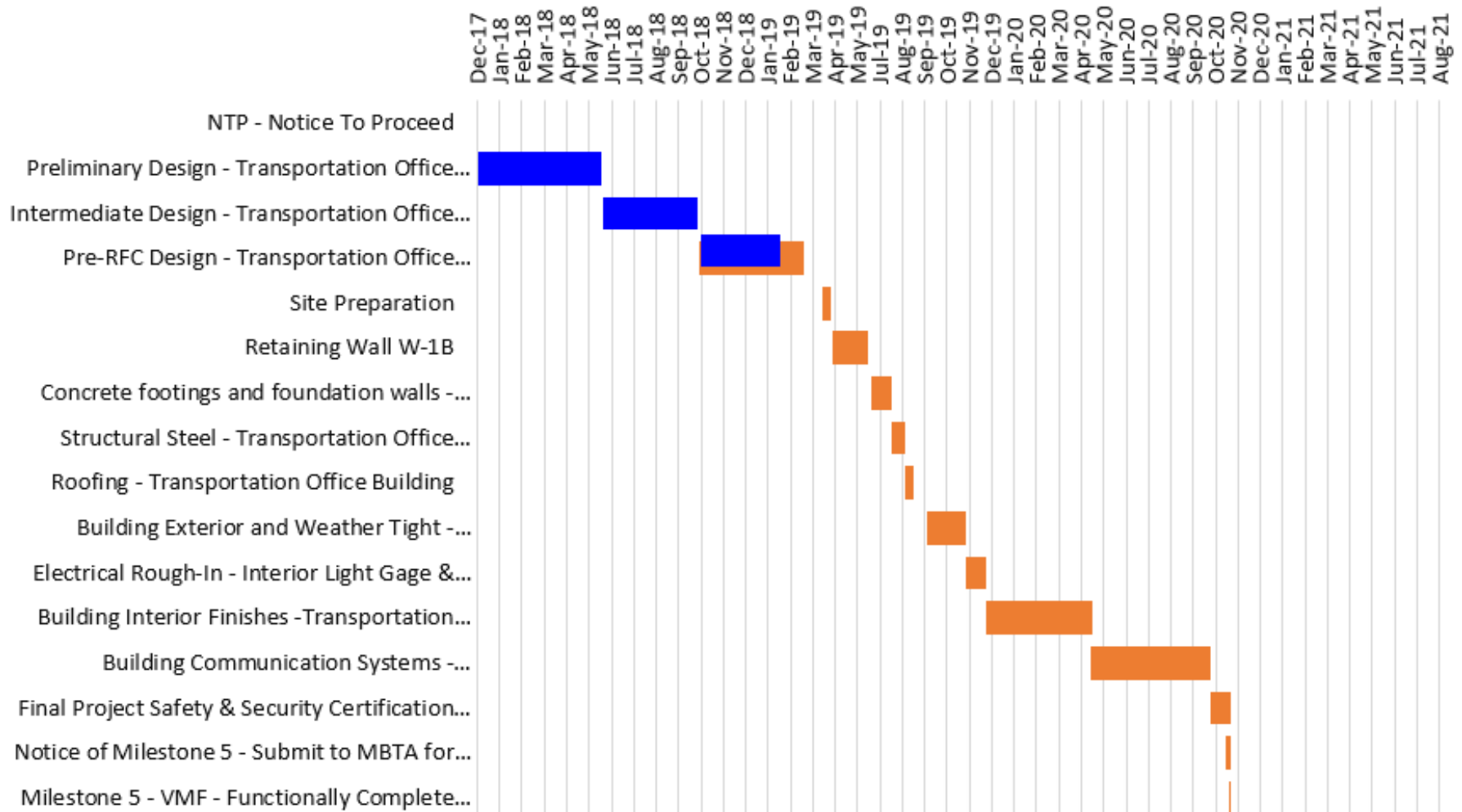
Critical Path

Milestone 5 – VMF Functionally Complete (-18 days)



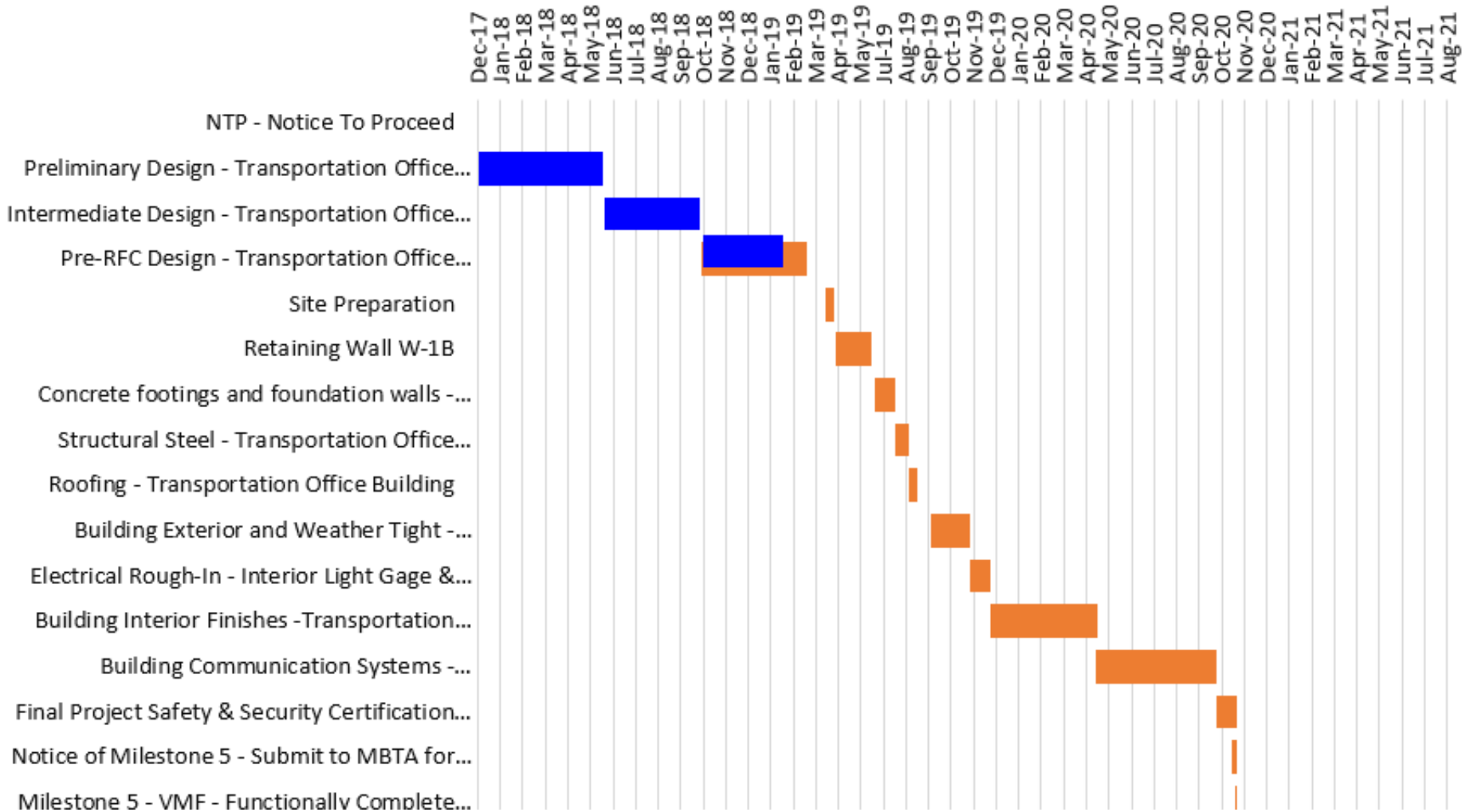
Near Critical Path

Milestone 5 – VMF Functionally Complete (-12 days)



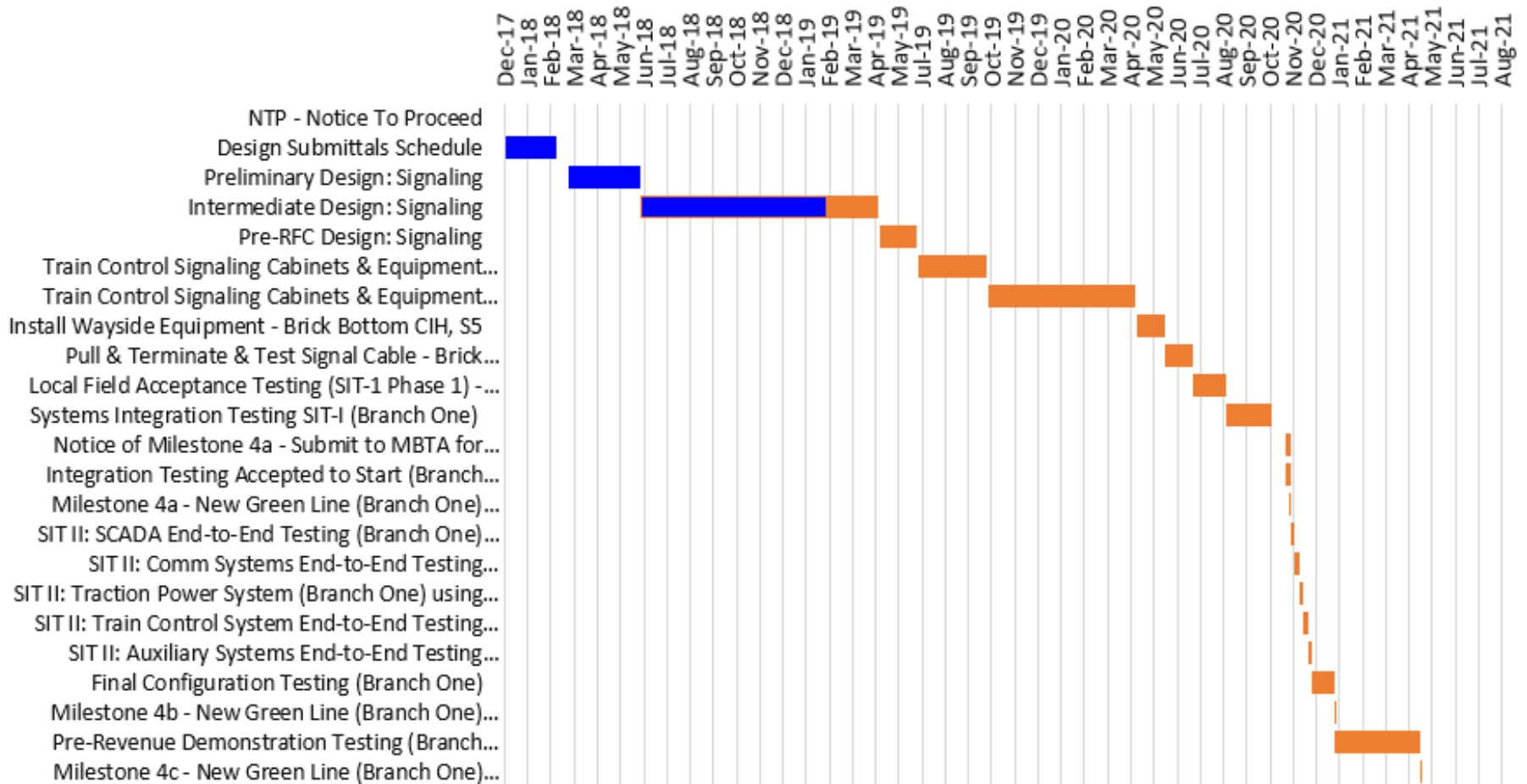
Near Critical Path

Milestone 5 – VMF Functionally Complete (-12 days)



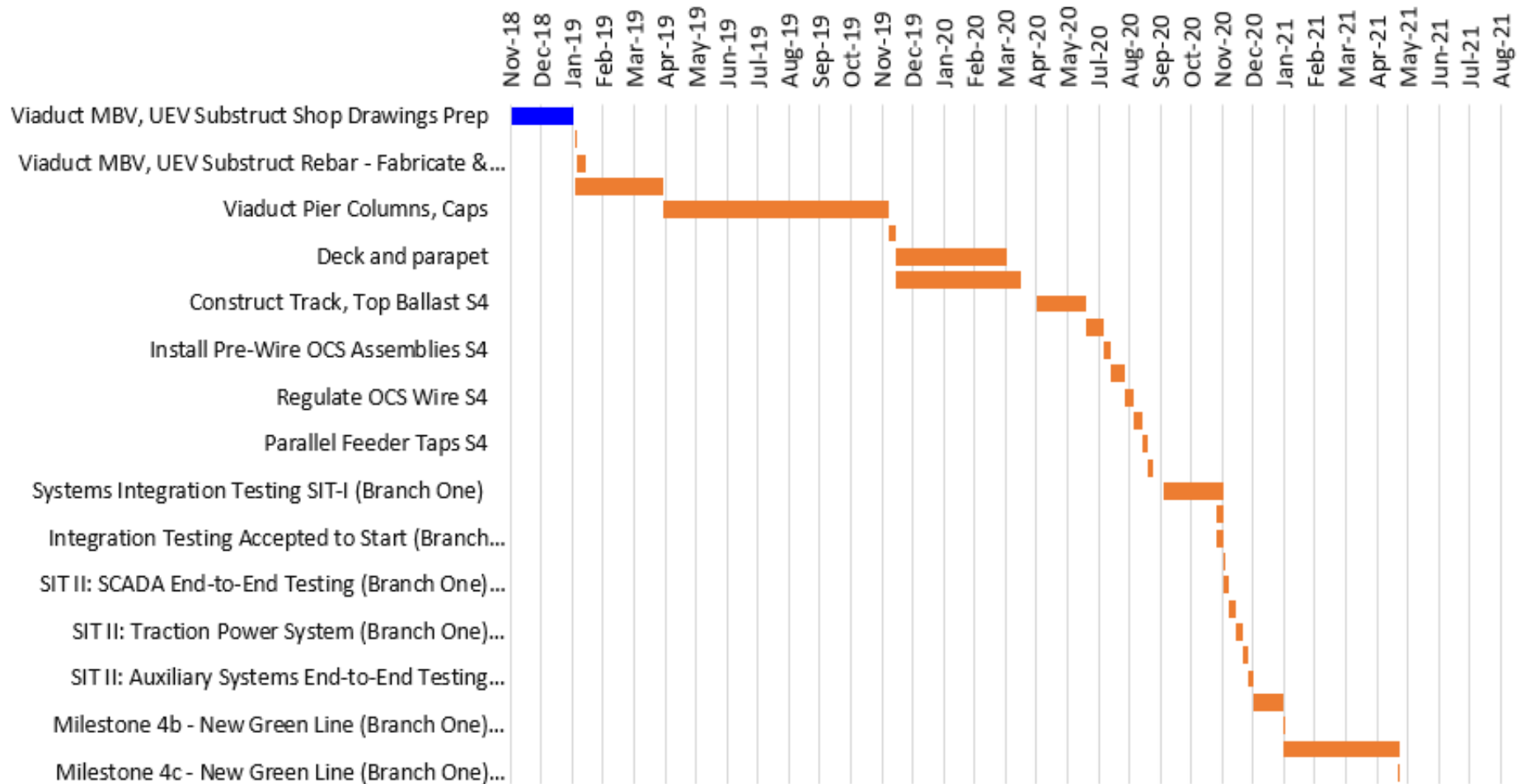
Critical Path

Milestone 4 – Branch One Complete (0 days)



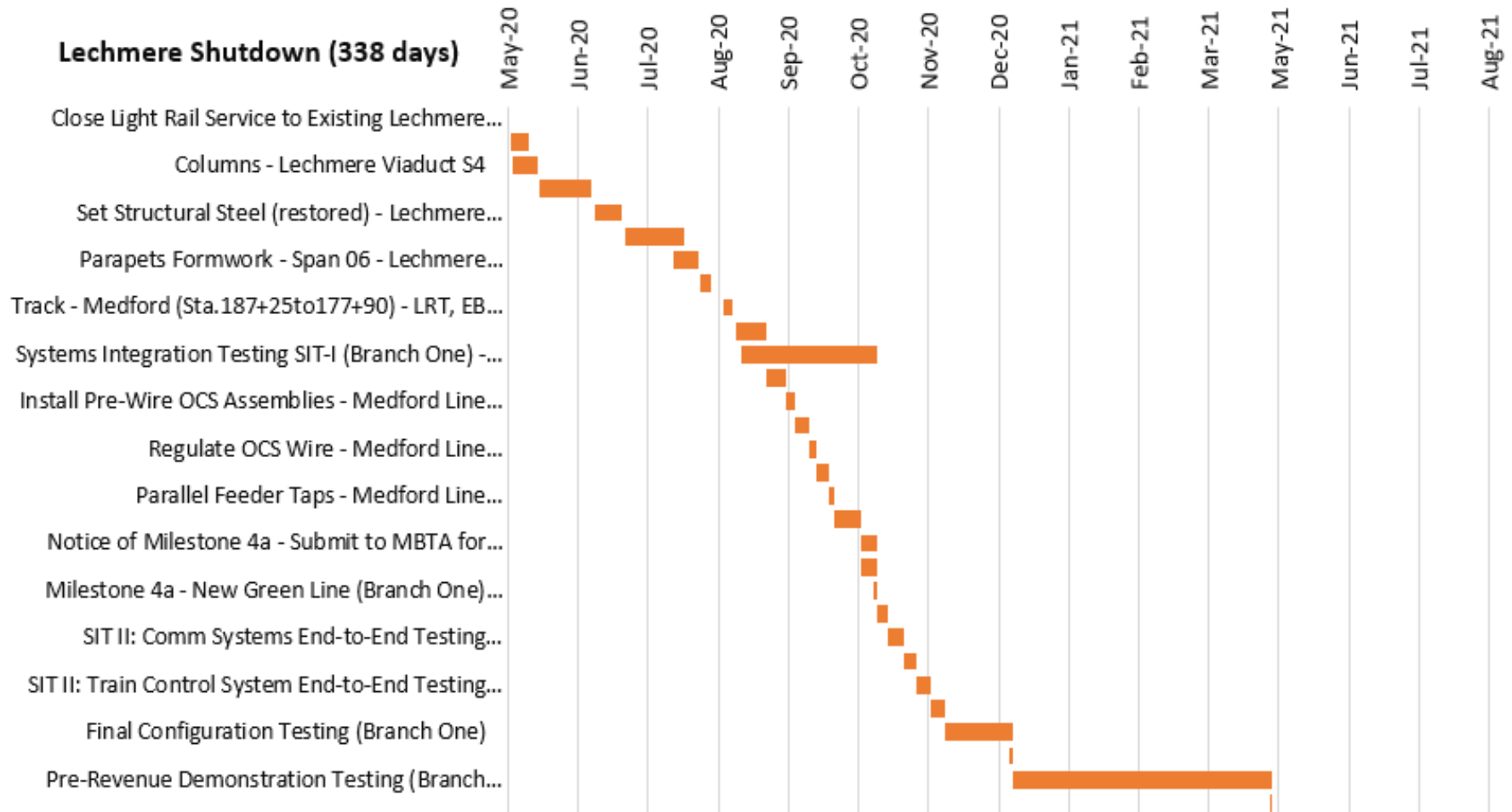
Near Critical Path

Milestone 4 – Branch One Complete (+7 days)



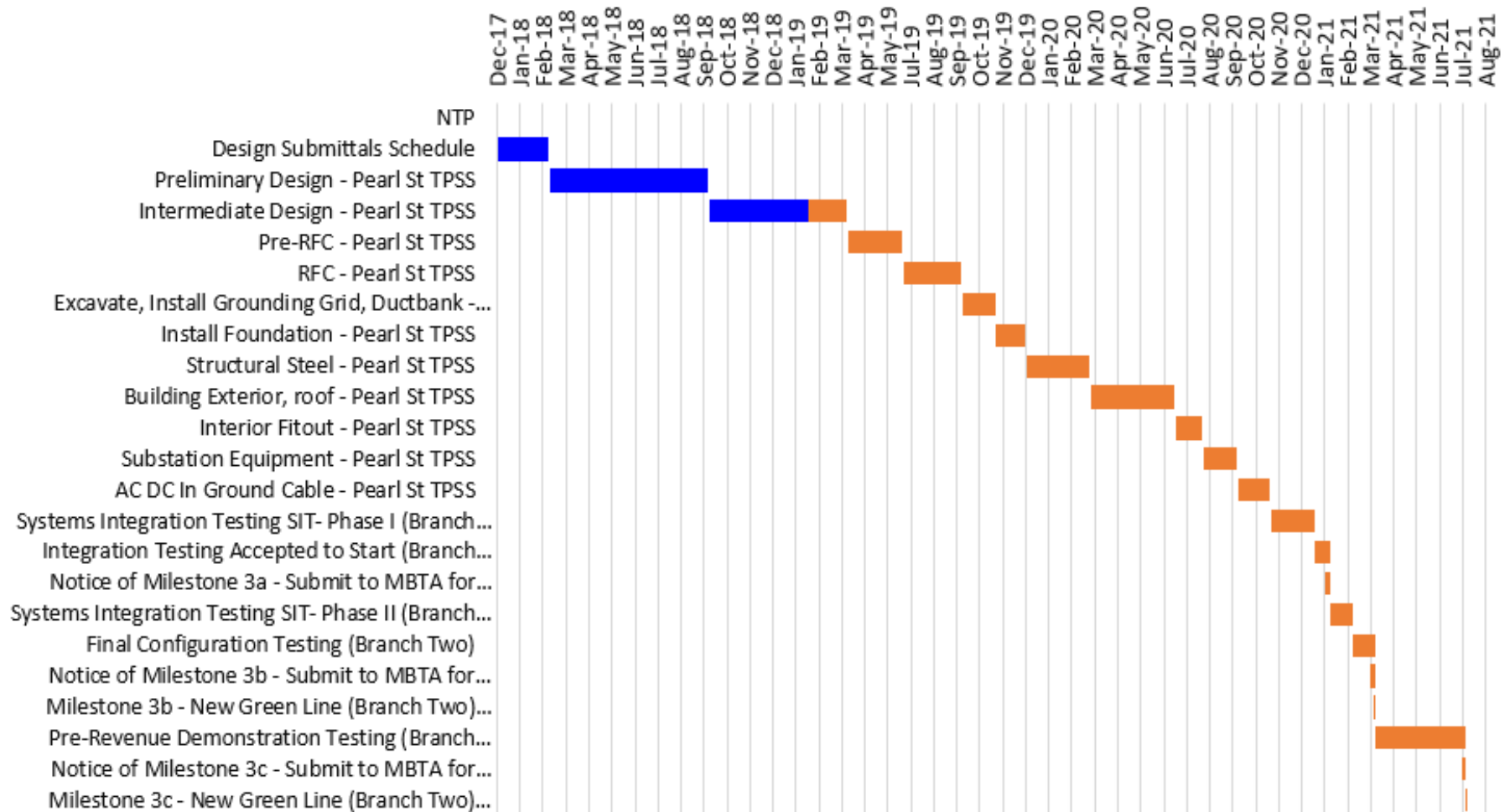
Critical Path

Milestone 4 – Spans 1 thru 7 Branch One



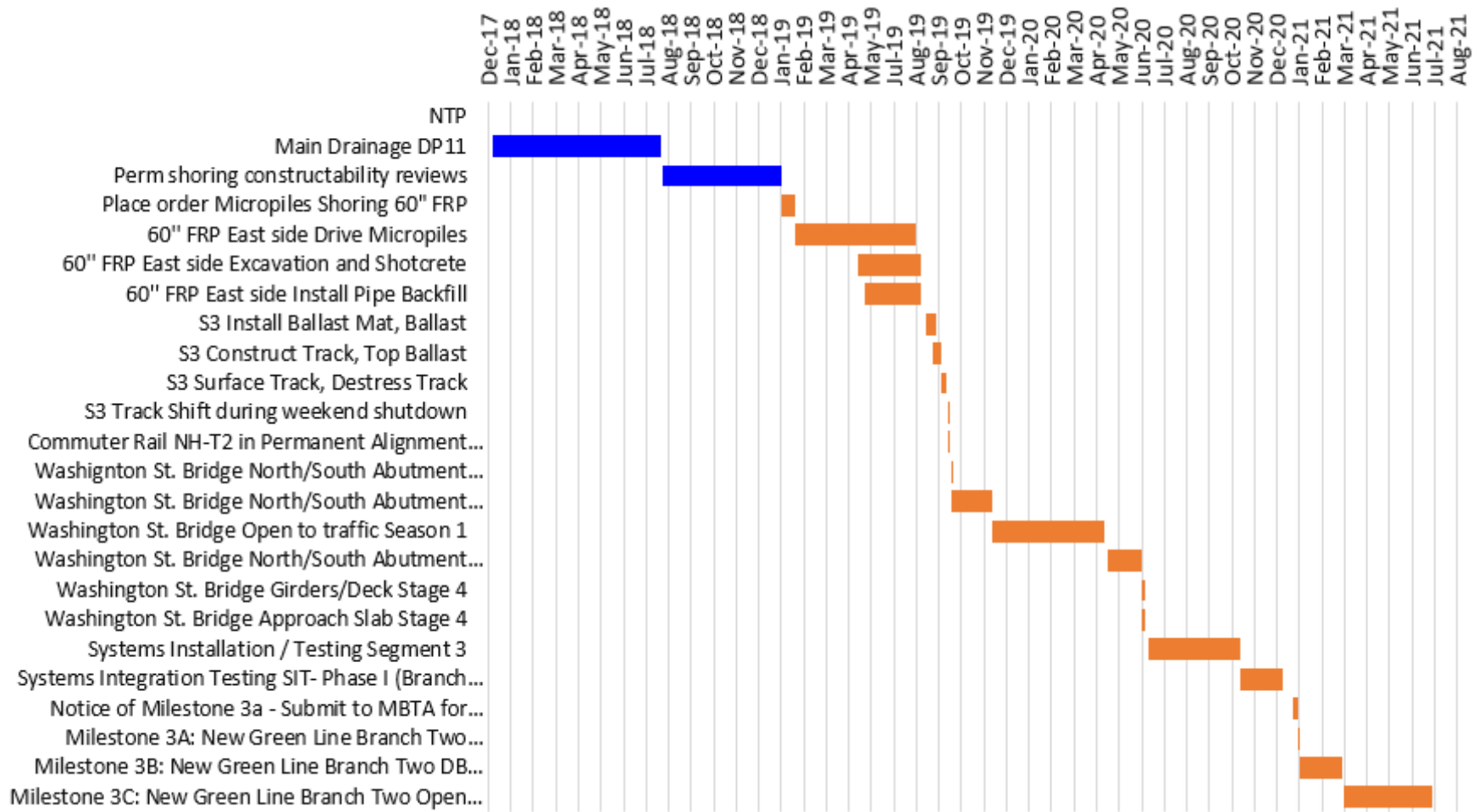
Critical Path

Milestone 3 – Branch Two Complete (-8 days)



Near Critical Path

Milestone 3 – Branch Two Complete (-3 days)



Discussion



GREEN LINE EXTENSION PROJECT
August 6, 2019 COMMUNITY WORKING GROUP MEETING – SUMMARY MINUTES

LOCATION OF MEETING: GLX Project Office, 200 Inner Belt Rd, 3rd Floor, Somerville, MA 02143

DATE/TIME OF MEETING: August 6, 2019; 4:00 AM – 5:30 PM

ATTENDANCE:

CWG Members: Elliott Bradshaw (East Somerville), Andrew Reker (For City of Cambridge), Jim McGinnis (Union Square), Laurel Ruma (College Ave), Jim Silva (Medford Ball Square), Joseph Barr (Cambridge), Ryan Dunn (Magoun Sq.), Dylan Manley (Union Sq.)

MassDOT/MBTA: Terry McCarthy – MBTA Deputy Program Manager of Stakeholder Engagement, Melissa Dullea (MBTA Bus Operations)

GLX Constructors (GLXC): Jeff Wagner, Randy McSherry, Erin Reed, Michael Weathered

GLX Project Team: Martin Nee, William Scully

Other Attendees: Tim Dineen (VNA resident)

PURPOSE: The GLX Community Working Group (CWG) was formed to help engage and foster communication with the communities along the GLX corridor by meeting with representative members (both residents and officials) of Cambridge, Somerville, and Medford.

BACKGROUND: The Green Line Extension (GLX) Project is an initiative of the Massachusetts Department of Transportation (MassDOT), in coordination with the Massachusetts Bay Transportation Authority (MBTA). The project intent is to extend existing MBTA Green Line service from Lechmere Station through the northwest corridor communities of Cambridge, Somerville, and Medford. The goals of the project are to increase mobility; encourage public transit usage; improve regional air quality; ensure a more equitable distribution of transit services; and support opportunities for sustainable development.

PRESENTATION:

John Dalton opened the meeting by asking if any members had specific questions they would like addressed.

Laurel Ruma (LR) – Pointed out that the previous GLX project featured a very long gradual ramp at College Avenue where the emergency egress exits the rear of the station. The current plan offers what she described as a very large zig-zag, fire escape type of structure that she felt was visually unappealing to the community. She asked if the community could open up a discussion about changing the structure back to a long gradual ramp.

John Dalton (JD) explained the reason for the change stating that the lack of a secondary entrance to the station required creating a way to get people away from the train and platform in case of an emergency. The design solution created a code-compliant area of refuge, which took on the form of an enclosed area away from the

platform. This solution was less than ideal. The project revisited the design and modified the “area of refuge” solution at both Magoun Square and College Avenue stations so that passengers could leave the vicinity of the station area entirely and thus distance themselves from any danger. The solution at College Avenue resulted in the switch-back ramp structure to get to street level.

LR had concerns with the “holding bin” structure, but is opposed to the solution in the current design. She would like have an ADA specialist at a meeting soon to address a wider range of concerns expressed by the community.

Jim McGinnis (JM) – Asked if there had been any coordination with US2 on the Union Square station design and the lack of an elevator.

JD explained there is no requirement for an elevator, but GLX has determined the best place to locate an elevator (designed and built by others). Through the US2 environmental compliance process, GLX has commented that the station design does not preclude the construction of a future elevator. He added the elevator would have to be near the top of the bridge in order to take advantage of the relatively flat area for ADA purposes.

In response to questions, GLX confirmed the project is still expected to be completed on-time and on-budget. In addition, the Broadway Bridge is still expected to be completed by spring of 2020.

Jim Silva (JS) commented that he would like to see the bus diversions from Lechmere Station in spring of 2020 provide direct (express) connections between Old Lechmere Station and North Station and/or Government Center.

Terry McCarthy (TM) turned the meeting over to Michael Weatherred who provided a safety briefing. He explained that hot weather is responsible for 60,000 visits to emergency rooms each year and it is the #1 killer in terms of weather related events at 680 deaths per year in the U.S. He also presented data showing that GLX's safety record score, to date, is approximately 400 percent better than the industry average.

Randy McSherry (RM) provided a construction overview on:
Broadway Bridge and the recent removal of the west abutment
Washington St. Bridge

- Medford St. Bridge
- School Street Bridge
- Continuous track welding
- The Vehicle Maintenance Facility
- Work near Union Square Station
- Work near Lechmere Station
- The Boston Engine Terminal Area
- Brickbottom and surrounding area
- Noise and retaining walls

- Between McGrath Highway and Walnut St.
- Between School and Sycamore St.
- Between Lowell and Cedar St.
- Between Cedar and Broadway
- Between Broadway and Harvard St.
- Between College Ave and Winthrop St.

During the presentation, LR asked for details of the sound wall design behind the signal tower adjacent to Burget Ave. The GLX team agreed to check the design and get back to her. She also expressed concern about concrete trucks on neighborhood streets.

JS asked for plenty of notice when GLXC begins construction on the deep drainage system near Granville Ave. Randy McSherry explained weekend work would continue frequently through August and into the fall of 2019. He stated the Multi-Purpose-Machine would be in the area throughout this time and he horn would noticeable each time it starts and stops.

Terry McCarthy and Jeff Wagner outlined additional outreach efforts on the part of GLX including two Red Cross Blood drives and outreach to the Medford Family Network.

William Scully (WS) presented detailed information on the basics of GLX scheduling. He explained that the project monitors Scope, Schedule, and Budget.

- These 3 elements feed into milestones and the “critical path”
- Once the critical path is developed, the project monitors positive and negative float
- The keys are:
- Tracking actual progress and productivity
- Actual finish/completed dates
- Analysis on risk
- He explained how project schedulers look ahead in time
- Where Project Controls sees future risk or stress on milestones, they intervene by creating ways to recover positive float, thereby keeping the project on-schedule
- The schedule is more than 7,000 activities deep and is constantly being managed and analyzed

In response to the schedule details presented, the CWG requested a simplified schedule be developed and shared. This schedule would be easy to understand but useful in terms of showing important project milestones. A Gant Chart format was agreed to and the project agreed to develop one.

The CWG suggested a milestone calendar be developed that would filter the 7,000 activities being tracked into a subset of progress completions that the public would be interested in. One suggestion put forward as an example was a schedule based on completion dates for design packages.

Jim Silva agreed to provide a list of what the public would like to track and see on the on the schedule. Bridge closings, track throws, station starts, structural steel arrival, were identified as logical starting points for the publicly facing schedule.

JM mentioned the need for very clear disclaimers and exclamations that the schedule is subject to change.

#

Next meeting September 3, 2019 at GLX Project Office at 200 Inner Belt Rd in Somerville.